

Service Manual

Mini Cassette

Stereo Cassette Player

RQ-S45

※
 DOLBY SYSTEM



Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	

※ Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

AR90 MECHANISM SERIES

■ SPECIFICATIONS

General:

Power Requirement: Battery; 1.5V (one "AA" size battery)
 (Panasonic UM-3/R6P, AM3/LR6 or equivalent)
 Rechargeable Battery; DC 1.2V with an included Panasonic Rechargeable Battery (RP-BP61SYB) x 1
 AC; with optional Panasonic AC adaptor RP-AC11
 Power Output: 6mW + 6mW
 Input: DC IN; 1.5V (mini jack, \ominus \ominus \oplus \oplus)
 Output: Headphones; 16Ω (φ3.5)
 Dimensions: (W x H x D) 106 x 73.8 x 18.6mm
 Weight: 153g (with rechargeable battery)

Charger: (E)

(EB)

Input: AC 220V, 50Hz, 4W
 (RP-BC155EY-0)Input: AC 240V, 50Hz, 4W
 (RP-BC155EBYA)Output: DC 1.2V, 350mA
 15~20,000Hz (with a normal tape)
 15~20,000Hz (with a CrO₂ type tape)

15~20,000Hz (with a Metal tape)

Motor: Electrical governor motor
 Track System: 4-track 2-channel stereo playback
 Tape Speed: 4.8cm/s

Design and specifications are subject to change without notice.

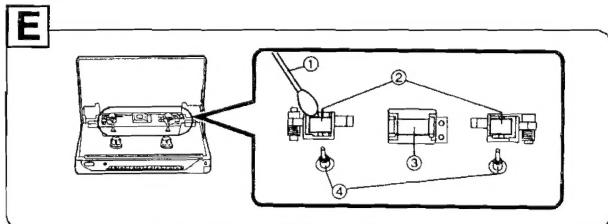
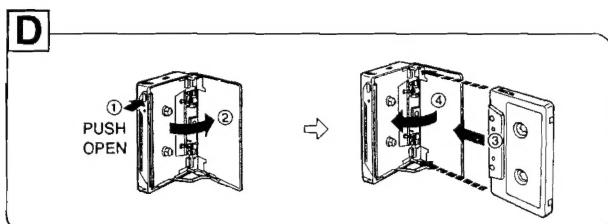
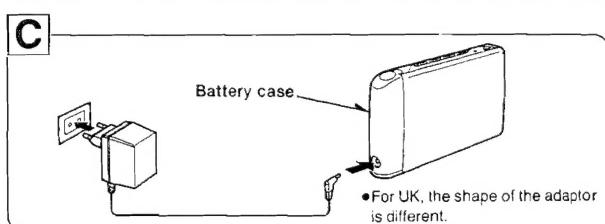
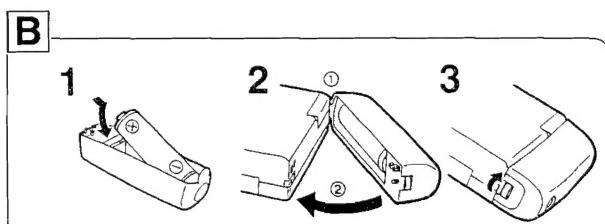
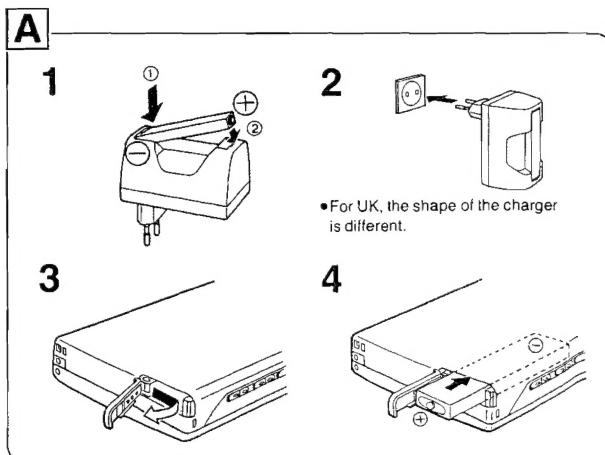
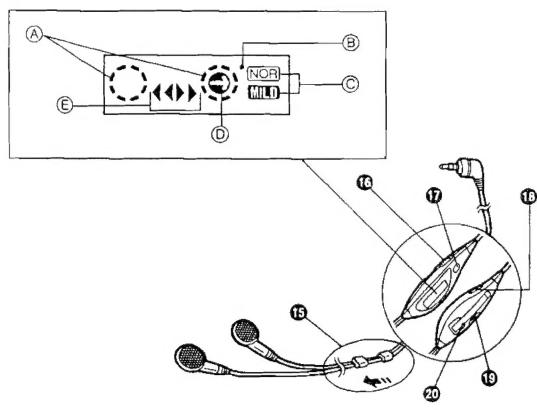
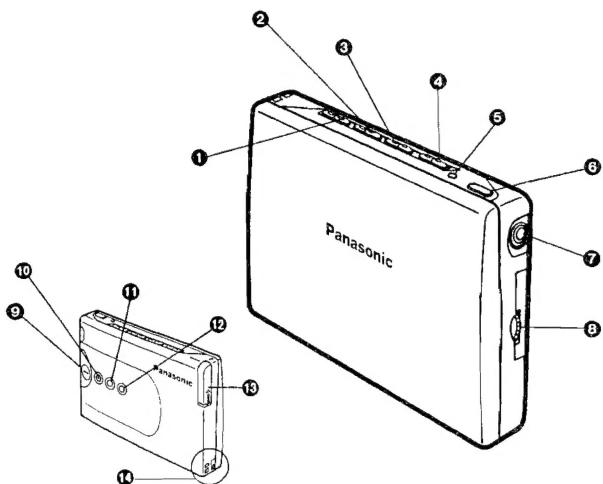
■ CONTENTS

	Page
OPERATING INSTRUCTIONS	2~4
PROCEDURE FOR THE REPLACEMENT OF THE MECHANISM BLOCK	5
PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM	6
DISASSEMBLY INSTRUCTIONS	7~9
MEASUREMENTS AND ADJUSTMENTS	10
TERMINAL FUNCTION OF IC	10, 11
HOW TO CHECK OPERATIONS DURING DISASSEMBLY AND SERVICING	12, 13

	Page
SCHEMATIC DIAGRAM	14~16
PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM	17, 18
REPLACEMENT PARTS LIST	19, 20
CABINET PARTS LOCATION	21
MECHANICAL PARTS LOCATION	21
RESISTORS & CAPACITORS	22, 23
PACKING	23

Panasonic

■ OPERATING INSTRUCTIONS

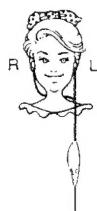


PRECAUTIONS

- Avoid using or placing this unit near sources of heat. Do not leave it in an automobile exposed to direct sunlight for a long period of time with the doors and windows closed, as this may deform the cabinet.
- When not in use, disconnect the AC adaptor from the AC power outlet.

Precautions for Listening with the Headphones

- Do not play your headset at a high volume. Hearing experts advise against continuous extended play.
- If you experience a ringing in your ears, reduce volume or discontinue use.
- Do not use while operating a motorized vehicle. It may create a traffic hazard and is illegal in many areas.
- You should use extreme caution or temporarily discontinue use in potentially hazardous situations.
- Even if your headset is an open-air type designed to let you hear outside sounds, don't turn up the volume so high that you can't hear what's around you.



Stereo earphones (included)

The right earphone cord is longer than the left and is adjustable for your convenience.

LOCATIONS OF CONTROLS

- ① S-XBS Switch (S-XBS)
- ② Dolby* Noise Reduction Switch (DOLBY NR)
- ③ Reverse Mode Selector (REV MODE)
- ④ Hold Switch (HOLD)
- ⑤ Operation/Battery Check Indicator (OPR/BATT)
- ⑥ Push Open Button (PUSH OPEN)
- ⑦ Headphones Jack () 16Ω φ3.5
- ⑧ Volume Control (VOL)
- ⑨ Play/Direction Button (PLAY/DIR ▲ ▶)
- ⑩ Stop Button (■)
- ⑪ Fast Forward Button (FF)
- ⑫ Rewind Button (REW)
- ⑬ Rechargeable Battery Cover
- ⑭ Connection Part for Battery Case

Stereo Earphones with remote controller

- ⑮ Slider
- When not in use, slide to prevent entanglement of the cord.
- ⑯ Amenity sound control Switch (ASC)
- ⑰ Remote Control Button

※ ⑯ Hold Switch (HOLD)

⑯ Volume Control (VOL)

⑯ Clip

- Ⓐ Running Indicator
- Ⓑ Operation Time Indicator
- Ⓒ Amenity Sound Control Switch Indicator
- Ⓓ Remote Control Operation Indicator
- Ⓔ Running Direction Indicator

*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

Optional R6/LR6 Battery Operation (Refer to ⑮.)

Insert a R6/LR6 battery (Panasonic UM-3 or equivalent, not included) into the Battery Case (included), then attach it to the unit. Make sure that the proper polarity is maintained.

To Prevent Possible Damage to this Unit

- Load new battery with its polarity (+ and -) aligned correctly.
- Do not apply heat to battery or internal short-circuit may occur.
- If this unit is not to be used for a long period of time, or used on AC mains supply, remove the battery and store it in a cool and dry place.
- Remove spent battery immediately.

Notice:

Do not carry the Battery Case in your pocket or bag with the battery installed. It may be possible that a metal object will short-circuit the battery pack and become hot.

To Extend the Operation Time to about 12 Hours...

Install both types of battery (recharged rechargeable battery and optional LR6 alkaline battery) to the unit.

Operation Time Indicator (Ⓑ)

This function keeps track of operation time that elapses following insertion of battery. When two hours have passed, the mark "●" will appear on the LCD to inform the user. Count is automatically reset when battery is removed.

AC Power Operation (Refer to ⑮.)

Attach the Battery Case to the unit and connect the optional AC adaptor (RP-AC11) as shown in the figure.

CASSETTE TAPES

This unit is equipped with an auto tape select function; you can use normal, CrO₂ or metal types of tape.

Notes:

- Cassette tapes, both recorded and unrecorded, should not be stored in locations with high temperature, high humidity or direct sunlight. Never place a recorded cassette near a magnetic source, such as a magnet or a TV set as this may affect tape performance.
- Do not use C-120 tapes with this unit because these tapes can easily become broken or stretched if not used with extreme care and may get tangled with the Capstan and Pressure roller.

POWER SOURCE

The Rechargeable Battery and R6/LR6 Battery (not included) are used for the unit operation.

Rechargeable Battery Operation (Refer to ⑮.)

For its initial use after purchasing or its use after a long time interval (more than three months), make sure to recharge the Rechargeable Battery. Normally 2 hours recharging makes the approximately 3.2 hours tape playback possible.

1. Insert the Rechargeable Battery into the Charger, making sure that the proper polarity is maintained.
2. Plug the Charger into your household AC power outlet.
3. Open the Rechargeable Battery Cover.
4. Insert the charged battery into the unit.

Disconnect the Charger in about 2 hours.

Notes:

- Do not recharge more than 24 hours, otherwise the Rechargeable Battery life may be shortened.
- For its initial use after purchasing or its use after a long time interval, 2 hours recharging may not make normal operation time possible. But the repeat of recharging will recover the normal operation time.
- Use only the included Charger when recharging.
- During recharging, the Charger and Rechargeable Battery may have a little heat. But it is normal.
- Avoid recharging or placing the Rechargeable Battery near sources of heat or in the much humid ambience.
- Do not attempt to recharge R6/LR6 type carbon or alkaline batteries in the Charger.

Rechargeable Battery Life

This Rechargeable Battery can be recharged about 300 times. Over 300 times, its operation time will become shortened. That's time for replacing the Rechargeable Battery (RP-BP62).

When to Recharge the Rechargeable Battery or Replace the Battery

When the battery becomes weak, the Operation/Battery Check Indicator (⑤) will dim or turn off.
It's time to recharge the Rechargeable Battery or replace the R6/LR6 Battery with new one.

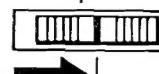
HOLD OPERATION

Setting the Hold Switch (④) to "HOLD" position will hold the present condition of all controls. This is useful to prevent the unexpected operation. There is a Hold Switch on the main unit (④) and the Remote Controller (⑯). In order to operate this unit it is necessary to release the hold condition by operating one of these switches.

※ About the hold switch

Before operating the button, be sure to release the hold state.

HOLD



AMENITY SOUND CONTROL OPERATION

When the Amenity Sound Control Switch (⑩) is set, the Amenity Sound Control Switch Indicator (⑪) will read "MILD". When this switch is cancelled, the display will read "NOR".

Setting to the "MILD" position will make the more amenity sound possible. Also it will lessen the leaking noisy high sound disturbing the people around you in the train and reduce the strain of listening for a long time.

TAPE PLAYBACK

1. Press the Push Open Button (⑩) to open the cover and insert the cassette. (Refer to ⑫.)
•After closing the cover, the tape will be wound and the slack will be taken up automatically.
2. Plug the Stereo Earphones into the Headphones Jack (⑦).
Make sure to install the jack completely so that outer ring is sealed into place firmly.
3. Release the hold condition (⑩).
4. Press the Play/Direction Button (⑨) and adjust the volume.
•The Running Direction Indicator (⑪) will appear.
•The Running Indicator (⑫) will move.

To stop the tape moving, press the Stop Button (⑩).

Fast Forward and Rewind

This unit allows the tape to fast forward or rewind by simply pressing the Fast Forward (⑩) or Rewind (⑪) Button.

To fast forward the tape, press the Fast Forward Button.

To rewind the tape, press the Rewind Button.

•When the tape reaches its end, the tape will automatically stop.

REMOTE CONTROL OPERATION

The Remote Control Button (⑩) changes the operation of this unit depending on when and how many times it is pressed.

In stop condition

Press once The playback will start.

In playback condition

To stop Press the button once.

To change the tape direction Press and hold the button for more than 1 second.

To fast forward Press the button twice.

To rewind** Press the button three times.

In fast forward or rewind

To stop the fast forward or rewind and resume playback Press the button once.

*If the tape is forwarded to the end of the tape, the playback will start from the reverse side automatically. (Skip Reverse Function)

**If the tape is rewound to the beginning of the tape, the playback will start from the same side automatically. (Rewind Auto Play Function)

Notes:

- Before using the Remote Controller, be sure to release the hold condition of the controller. [Slide up the Hold Switch (⑩) to release.]
- For volume adjustment, first set the Volume Control (⑩) of the main unit to 5-7.
- When pressing the button twice or three times in succession, press it within one second and at equal intervals.

Auto Play

Skip Reverse

During playback, if you press the Fast Forward Button (⑩), the tape will fast forward to the end, reverse direction, and the playback will start from the beginning of the reverse side automatically.

Rewind Auto Play

During playback, if you press the Rewind Button (⑪), the tape is rewound and the playback will start from the beginning of the same side automatically.

Manual Reverse

Select the playback side by pressing the Play/Direction Button (⑨) during playback. •The Running Direction Indicator (⑪) will change. (FWD or REV).

Auto Reverse

When the tape comes to its end, the auto reverse system functions and the tape direction changes automatically to start playing the opposite side of the tape.

⑩ : For playback of both sides of the cassette tape once.

Notes:

•Playback will stop when the end of reverse side is reached.

•If playback starts from the reverse side, only that side will be played.

⑪ : For continuous playback of both sides of the cassette tape.

Note:

When the cassette compartment cover is opened or after the batteries are replaced, the playback will always start from the forward side.

S-XBS Switch (⑩)

S-XBS boosts the low frequency range.

You can enjoy the dynamic low sound.

The selection of "MAX" and "MID" to suit your taste is possible.

Dolby Noise Reduction Switch (⑩)

This unit includes Dolby Noise Reduction which reduces the noise.

Set this switch to "ON" to play back a tape recorded with Dolby Noise Reduction. For other tapes, set to "OFF".

REMOTE CONTROL OPERATION AND BEEPS

The beep (pi) will be emitted each time the Remote Control Button (⑩) is pressed. Also, confirmation beeps will be emitted after pressing to confirm the proper operation.

Operation	Beep	Confirmation Beep	Function
Press once	Pi	—	Play
(during playback) Press Twice	PiPi	PiPi	Fast Forward (Skip Reverse)
(during playback) Press three times	PiPiPi	PiPiPi	Rewind (Rewind Auto Play)
(during playback) Press and hold for more than one second	Pi	Pi	Change tape direction
(during playback) Press once	Pi	Pi...	Stop

Beeps and Display

When the Remote Control Button is pressed, the unit will beep and the mark "⑩" will appear on the display. (The mark "⑪" will appear after the unit begins playback.)

Beeps-Stereo Function

Depending on the tape side being played, beeps will be emitted from either the right or left earphone.

During playback of forward side (FWD): Right Stereo earphone

During playback of reverse side (REV): Left Stereo earphone

MAINTENANCE (Refer to ⑫.)

① Cotton Swab

③ Head

② Pressure Rollers

④ Capstans

The head assembly, Capstans, and Pressure rollers are in constant contact with the tape. If these parts are dirty, the sound quality will be impaired. Periodically, clean these parts.

1. Open the Cassette Compartment cover.

2. The Playback head, Capstans and the Pressure rollers can be seen. Clean them with a Cotton swab.

Notes:

- If the head assembly is extremely dirty, clean it with a soft cloth dampened with a little alcohol.
- Do not bring metal articles or magnetic material, such as a screwdriver, near the head assembly.
- Do not clean the plastic cabinet with benzine or thinner. Clean it with a cloth, dampened in a mild solution of soap and water. Avoid excessive moisture.
- Avoid spray-type insecticides. Some insecticides contain chemicals that could cause cabinet deformation.

■ PROCEDURE FOR THE REPLACEMENT OF THE MECHANISM BLOCK

• How to replace the mechanism block

The mechanism block is supplied without other parts as a semi-assembly. The head block, motor and belt are supplied separately from the mechanism block.

If the mechanism block is exchanged as a replacement assembly, follow the preparation procedure below.

Preparation procedure

Remove the head block, motor and belt from the mechanism to be replaced and replace those parts to the new mechanism block.

(Refer to the "PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM".)

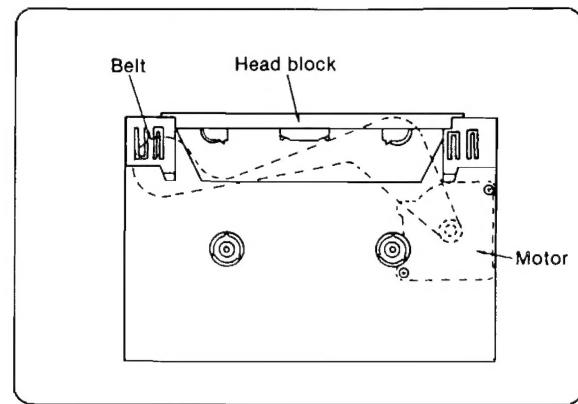


Fig. 1

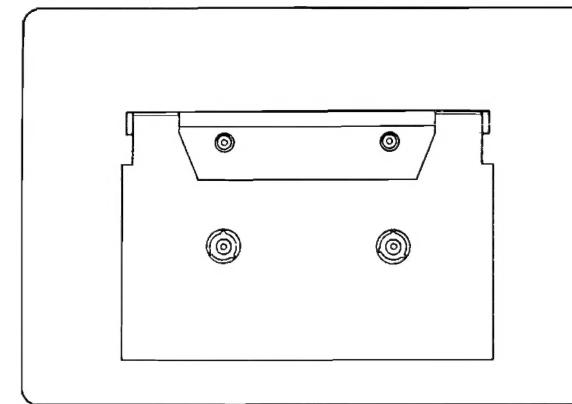


Fig. 2

※ The adjustment of the mechanism block is unnecessary after replacement.

• How to replace the head block

The head and pinch roller are supplied together in the head block. The pinch roller is also supplied separately.

Preparation procedure

The head block for replacement is not supplied with a holder as shown in the figure below. Therefore, remove the holder from the block to be repaired and mount it to the new head block. Then, proceed to replace the head block. (Refer to "PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM".)

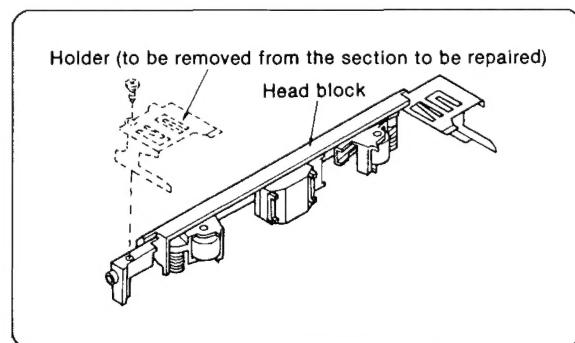


Fig. 3

※ Head azimuth adjustment is unnecessary.

■ PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM

• How to remove the mechanism

Follow the procedures in Ref. Nos. 1~7 in the Disassembly Instructions. (See pages 7, 8.)
※ After replacing the parts, refer to the notes for assembly. (See page 9.)

• How to remove the head block and pinch roller

1. Follow the procedures in Ref. Nos. 1 and 7 in the Disassembly Instructions, remove the rear cabinet and cassette compartment lid. (See pages 7 and 8.)
2. Remove 5 solders (Head FPC). (See Fig. 4.)
3. Remove 2 screws (①, ②) in order to remove the head block. (See Fig. 5.)
4. Remove 2 washers. (See Fig. 6.)
5. Remove 2 springs in order to remove the pinch roller. (See Fig. 7.)

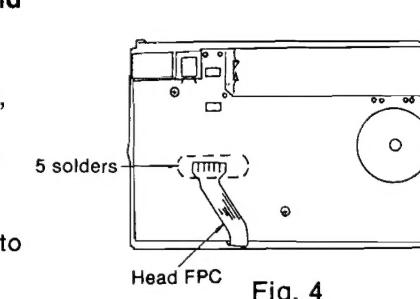


Fig. 4

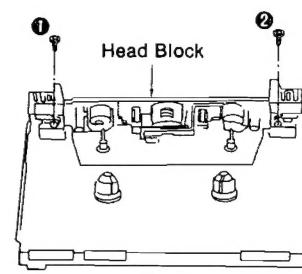


Fig. 5

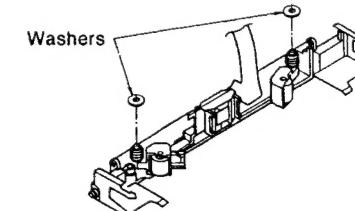


Fig. 6

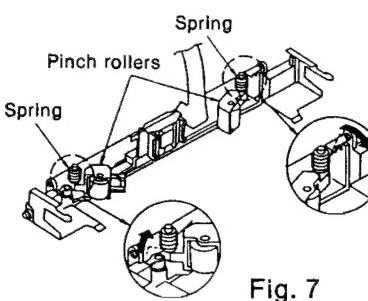


Fig. 7

• How to remove the motor and belt

1. Follow the procedures in Ref. Nos. 1~7 in the Disassembly Instructions. (See pages 7, 8.)
2. Remove the washer and motor wheel to remove the belt from the motor pulley. (See Fig. 8.)
3. Remove 2 screws (①, ②) in order to remove the motor. (See Fig. 9.)
4. Remove 2 screws (③, ④) and then the attachment plate to remove the belt. (See Fig. 10.)

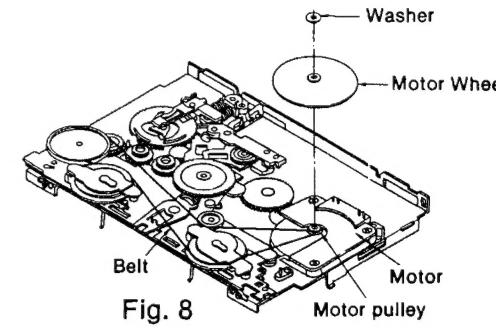


Fig. 8

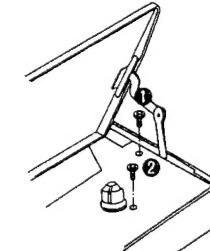


Fig. 9

• How to attach the belt

1. Attach the belt as shown in the figure. (See Fig. 11.)
2. Mount the attachment plate and secure it with 2 screws. (See Fig. 11.)

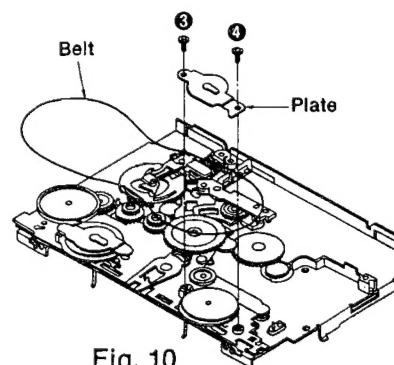


Fig. 10

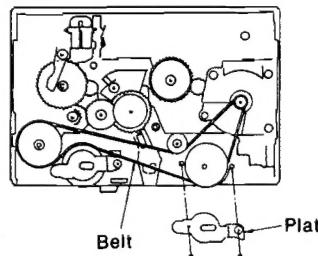
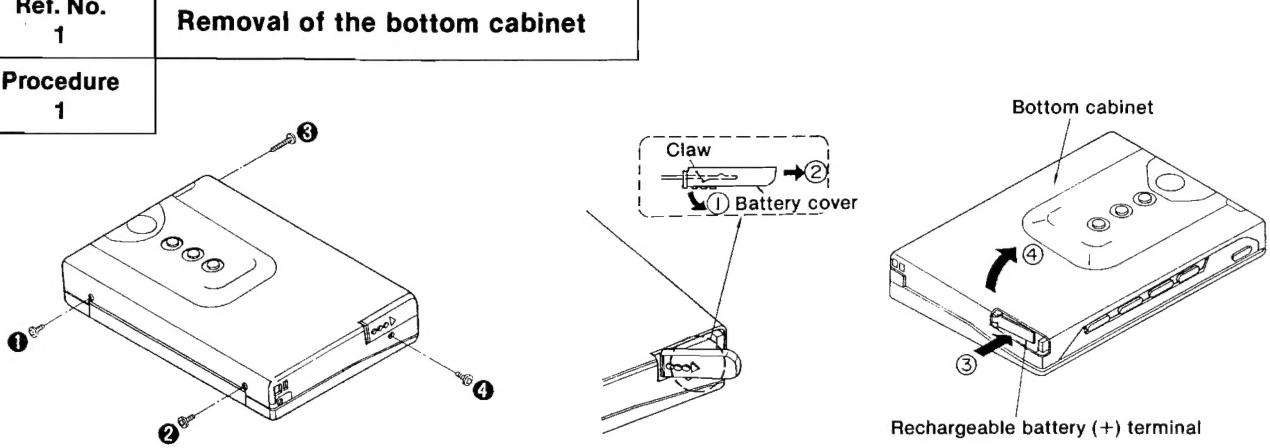
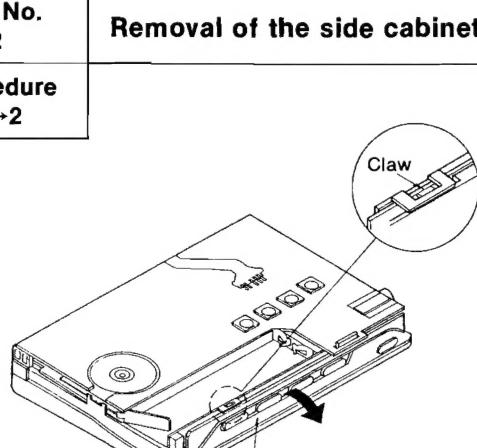
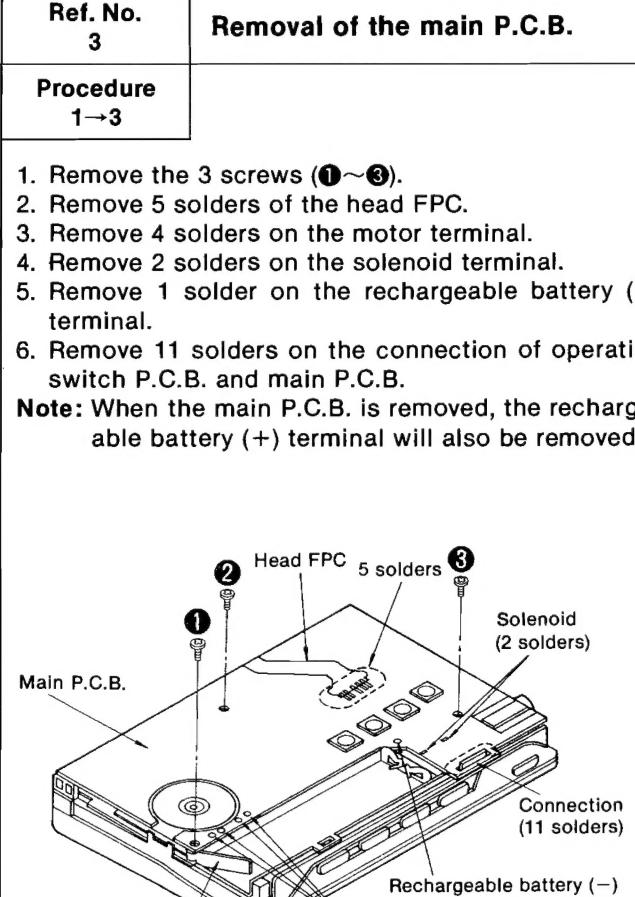
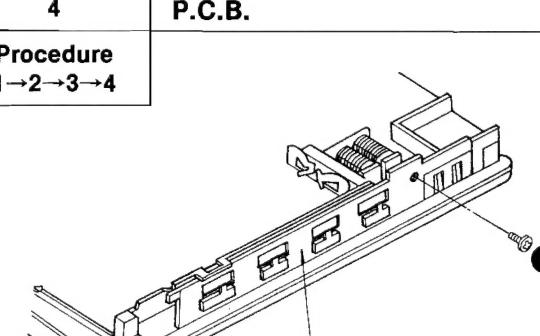
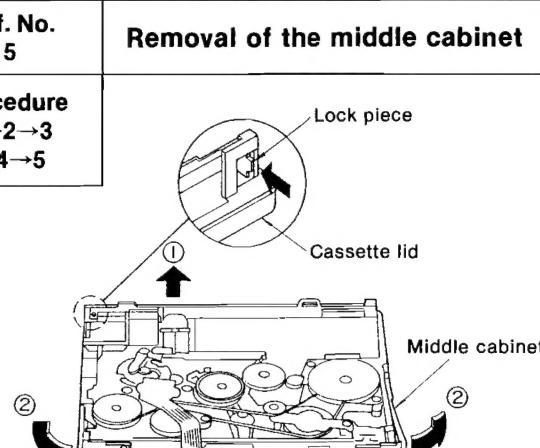
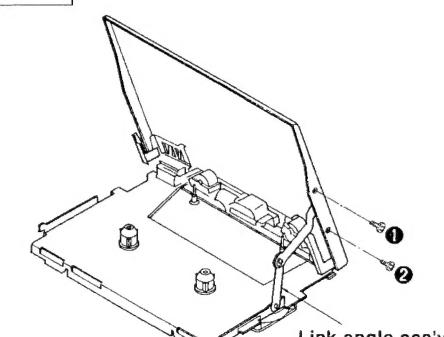
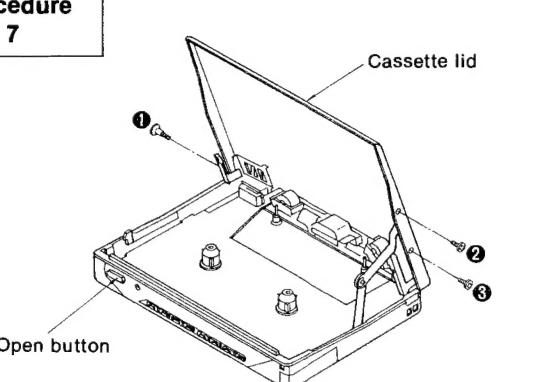
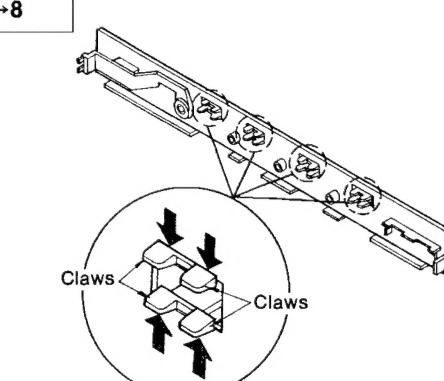
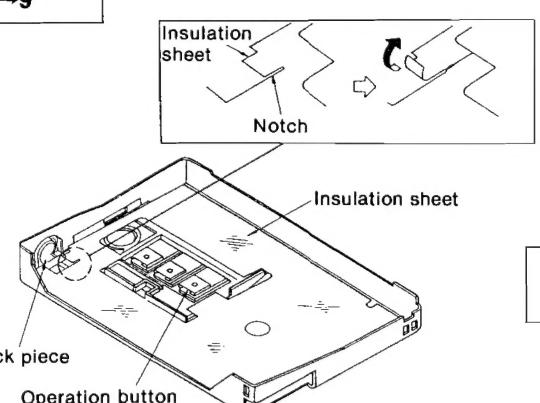
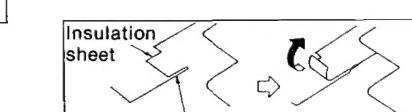
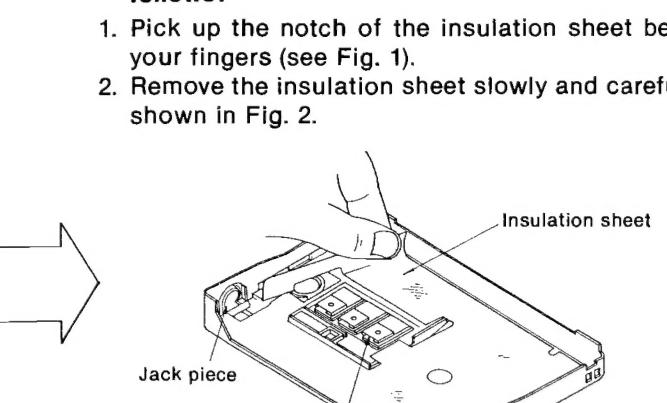


Fig. 11

■ DISASSEMBLY INSTRUCTIONS

THIS UNIT CONTAINS' F.P.C. BE CAREFUL NOT CUT OR DAMAGE THE FOIL DURING DISASSEMBLY.

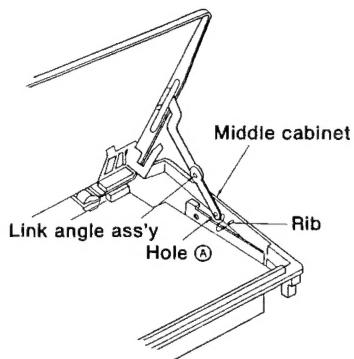
Ref. No. 1	Removal of the bottom cabinet
Procedure 1	 <p>1. Remove the 4 screws (1~4). 2. Remove the claw in the direction of the arrow ①, and then remove the battery cover in the direction of the arrow ②. 3. Remove the bottom cabinet in the direction of the arrow ④ while pushing the rechargeable battery (+) terminal in the direction of the arrow ③.</p>
Ref. No. 2	Removal of the side cabinet
Procedure 1→2	 <p>1. Remove the claw. 2. Remove the side cabinet.</p>
Ref. No. 3	Removal of the main P.C.B.
Procedure 1→3	 <p>1. Remove the 3 screws (1~3). 2. Remove 5 solders of the head FPC. 3. Remove 4 solders on the motor terminal. 4. Remove 2 solders on the solenoid terminal. 5. Remove 1 solder on the rechargeable battery (-) terminal. 6. Remove 11 solders on the connection of operation switch P.C.B. and main P.C.B. Note: When the main P.C.B. is removed, the rechargeable battery (+) terminal will also be removed.</p>
Ref. No. 4	Removal of the operation switch P.C.B.
Procedure 1→2→3→4	 <p>• Remove the 1 screw (1).</p>

Ref. No. 5	Removal of the middle cabinet	Ref. No. 6	Removal of the link angle ass'y
Procedure 1→2→3 →4→5	 <p>1. Push the lock piece in the direction of the arrow, and then open the cassette lid. 2. Push the middle cabinet in the direction of the arrows ②, and then remove it in the direction of the arrow ①.</p>	Procedure 1→2→3 →4→5→6	 <p>• Remove the 2 screws (1, 2)</p>
Ref. No. 7		Ref. No. 8	
Procedure 7		Procedure 1→2→8	
 <p>1. Push the open button, and then open the cassette lid. 2. Remove the 3 screws (1~3).</p>		 <p>• Push the claws in the direction of the arrow, and then remove the knobs.</p>	
Ref. No. 9		■ The operation buttons and jack piece are fixed by the insulation sheet. Remove the insulation sheet to detach the operation buttons and jack piece as follows:	
Procedure 1→9		 <p>1. Pick up the notch of the insulation sheet between your fingers (see Fig. 1). 2. Remove the insulation sheet slowly and carefully as shown in Fig. 2.</p>	
 <p>Fig. 1</p>		 <p>Fig. 2</p>	

Notes for assembly

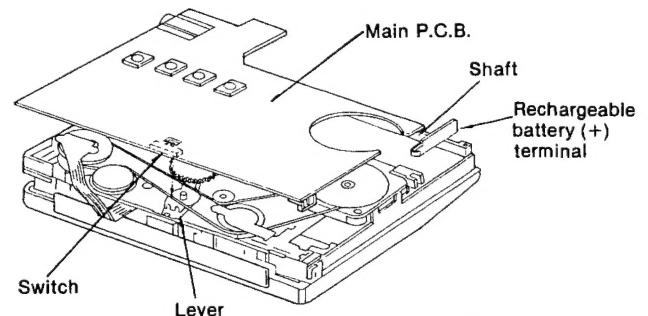
■ How to install the middle cabinet

- Engage hole Ⓐ of the link angle ass'y in the rib of the middle cabinet.



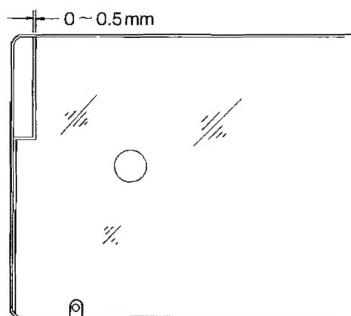
■ How to install the main P.C.B.

- Engage the switch in the lever of the mechanism.
- Insert the rechargeable battery (+) terminal in the shaft.



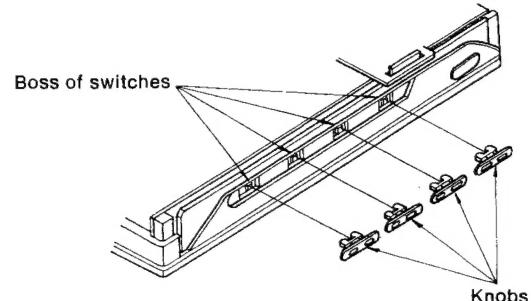
■ Note for attaching of the insulation sheet

- Fit an end of the insulation sheet to the battery compartment cover side, and past the sheet properly without any fold or wrinkle.



■ How to install the knobs

- Engage the knobs in the boss of switches.



MEASUREMENTS AND ADJUSTMENTS

ADJUSTMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ADJUSTMENT

1. Set volume control to maximum.
2. Set Dolby NR Switch to OFF.
3. Set ASC switch to NORMAL.
4. Set S-XBS Switch to OFF.
5. Set hold switch to OFF.
6. Set power source voltage to 1.5V DC.
7. Output of signal generator should not be higher than necessary to obtain an output reading.

CONTROL POSITIONS AND EQUIPMENT USED

1. Frequency counter

TAPE SECTION

ITEM	TEST TAPE	MEASUREMENT POINT	ADJUSTMENT POINT	PROCEDURE
Tape speed	QZZCWAT (3kHz, -10 dB)	Connect the frequency counter to Headphones jack (16Ω) (Refer to Fig. 1)	VR2 (Refer to Fig. 2 or 3)	Playback the central part of the tape and adjust VR2 so that the tape speed is as follows. Forward: $2960 \pm 10\text{Hz}$ Reverse: $2940 \sim 3050\text{Hz}$ Make sure that the frequency range is within $\pm 60\text{Hz}$ for between "Forward" and "Reverse" mode.

Note: The playback head is supplied on the head arm assembly. (See the Mechanism parts location on page 21.)

The assembly requires no adjustment.

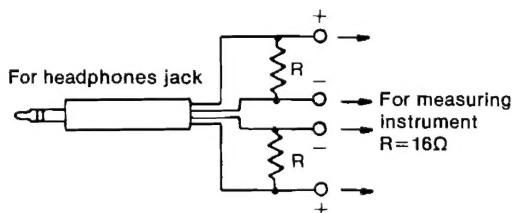


Fig. 1

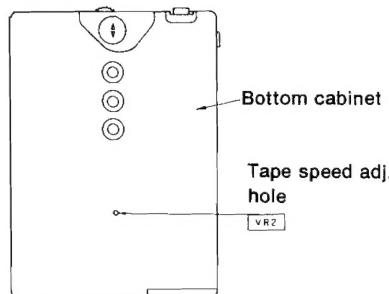
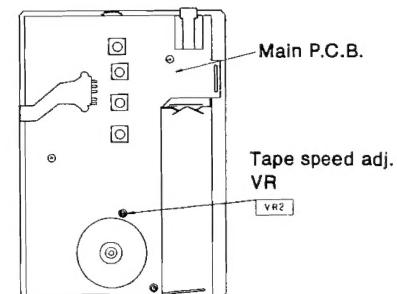


Fig. 2



Case of bottom cabinet is removed

Fig. 3

TERMINAL FUNCTION OF IC

IC6: M34210M2124G (MECHANISM CONTROL)

Terminal No.	Terminal Name	I/O	Function
1	NC	—	—
2	NC	—	—
3	CE	I	Connected to power supply.
4	RESET	I	Inputs the reset signal.
5	V _{DD}	—	Power supply terminal
6	TPS IN	—	Inputs the TPS control signal. Unused on this unit.
7	T.END	I	Inputs the signal for the detection of tape rotation. When the pulse signal is input: The current mode remains set as the tape is rotating. No pulse signal: Stops or starts reverse playback as the tape has stopped rotating (ie, reached the end).

Terminal No.	Terminal Name	I/O	Function
8	C	—	Condenser external terminal. Unused on this unit.
9	LED F	O	Outputs the LED lit signal that indicates that the tape is running. Outputs the head switching signal.
10	LED R	O	Outputs the LED lit signal that indicates that the tape is running.
11	REC	O	Outputs the recording LED lit signal.
12	TU. ON	O	Outputs the signal for turning ON/OFF the power on the DTS controller.
13	NC	—	—
14	POW	O	Outputs the power switching signal (POWER SW).

Terminal No.	Terminal Name	I/O	Function
15	MOTOR	O	Output the motor drive signal (MOTOR ON).
16	M-CCW	O	Outputs the counter clockwise motor control signal.
17	M-SPEED	O	Outputs the motor speed UP signal.
18	CN V _{ss}	-	For ground connection
19	V _{ss}	-	For ground connection
20	MUTE	O	Outputs the AMP muting signal. (Set to ON during muting.)
21	P-SOL	O	Outputs the solenoid drive signal for playback.
22	R-SOL	-	Outputs the solenoid drive signal for recording. Unused on this unit.
23	REC MUTE	-	Outputs the recording muting signal. Unused on this unit.
24	TPS	O	Outputs the TPS signal. For ground connection.
25	NC	-	-
26	FF	O	Outputs mechanism operation (FF) signal.
27	REW	O	Outputs the mechanism operation (REW) signal.
28	BEEP F	O	Generates the beep sound when the unit is controlled remotely.
29	PLAY-RSW	I	Inputs the mechanism status detection signal (REV PLAY). At low: ON At high: OFF
30	PLAY-FSW	I	Inputs the mechanism status detection signal (FWD PLAY). At low: ON At high: OFF
31	BEEP R	I	Generates the beep sound when the unit is controlled remotely.
32	DIS DATA	-	Unused on this unit. For ground connection.

Terminal No.	Terminal Name	I/O	Function
33	CE IN	I	Unused on this unit. For ground connection.
34	RADIO	I	Inputs the FUNCTION SW RADIO signal.
35	DATA OUT	O	Unused on this unit. For ground connection.
36	REMOTE	I	Inputs the signal for remote control.
37	NC	-	Connected to "REV MODE" terminal.
38	STOP	I	Inputs the mechanism operation signal (STOP). When a low pulse is input: Switches to the stop mode.
39	PLAY	I	Inputs the mechanism operation signal (PLAY). When a low pulse is input: Switches to the play mode.
40	FF	I	Inputs the mechanism operation (FF) signal. When a low pulse is input: Switches to the FF mode.
41	REW	I	Inputs the mechanism operation (REW) signal. When a low pulse is input: Switches to the REW mode.
42	OPEN	I	Inputs the signal that detects whether the cassette tape is inserted. At low: ON (close); the tape is inserted. At high: OFF (open); the tape is not inserted.
43	REV MODE	I	Inputs the reverse mode switching signal. At low: \leftarrow mode At high: \rightarrow mode
44	GND	-	For ground connection
45	OMR	I	Inputs the OMR SW signal (ONCE MORE SW).
46	HOLD	I	Inputs the HOLD SW signal. At low: ON (HOLD) At high: OFF
47	Xout	O	Outputs the clock signal.
48	Xin	I	Inputs the clock signal.

■ HOW TO CHECK OPERATIONS DURING DISASSEMBLY AND SERVICING

1. Cassette section

- Check operations during disassembly following the steps.

- Set the condition as shown in Fig. 1 in accordance with Disassembly Instructions. (DO NOT remove the solders on the head FPC.)
- Connect the PCB and motor with the extension cord (RFKZ0002).
- Short the short land with a soldering and then short-circuit them.
 - Short the short land Ⓐ for Power supply of AMP ON.
 - Short the short land Ⓑ for Power supply of motor ON.
 - Short the short land Ⓒ for Microcomputer reset.
- Note: See next page for the points to be short-circuited.
- Connect the rechargeable battery (+) terminal and the rechargeable battery (-) terminal foil to the power source (DC 1.5V) with a lead wire. (Fig. 1)
- Connect the rechargeable battery (-) terminal foil and the rechargeable battery (-) terminal with a lead wire (mechanism earth).
- Manually operate the plunger arm when checking the PLAY/STOP operation.
 - Manually pulling the plunger arm once sets the FWD mode; twice, REV; and, three times, STOP.

Notes: Operate the plunger arm manually. Even if the operation buttons are pressed, the plunger will not be actuated.

- Even if the mechanism unit is switched to the FWD mode in Step 6, the head change-over switch (IC1) will remain in the REV position, so set the REV mode to check the audio. Before checking the operation problems and adjustments, be sure to release the hold state. (Hold switch (S2): "OFF")
- After checking, unsolder the short land Ⓐ, Ⓑ and Ⓒ.

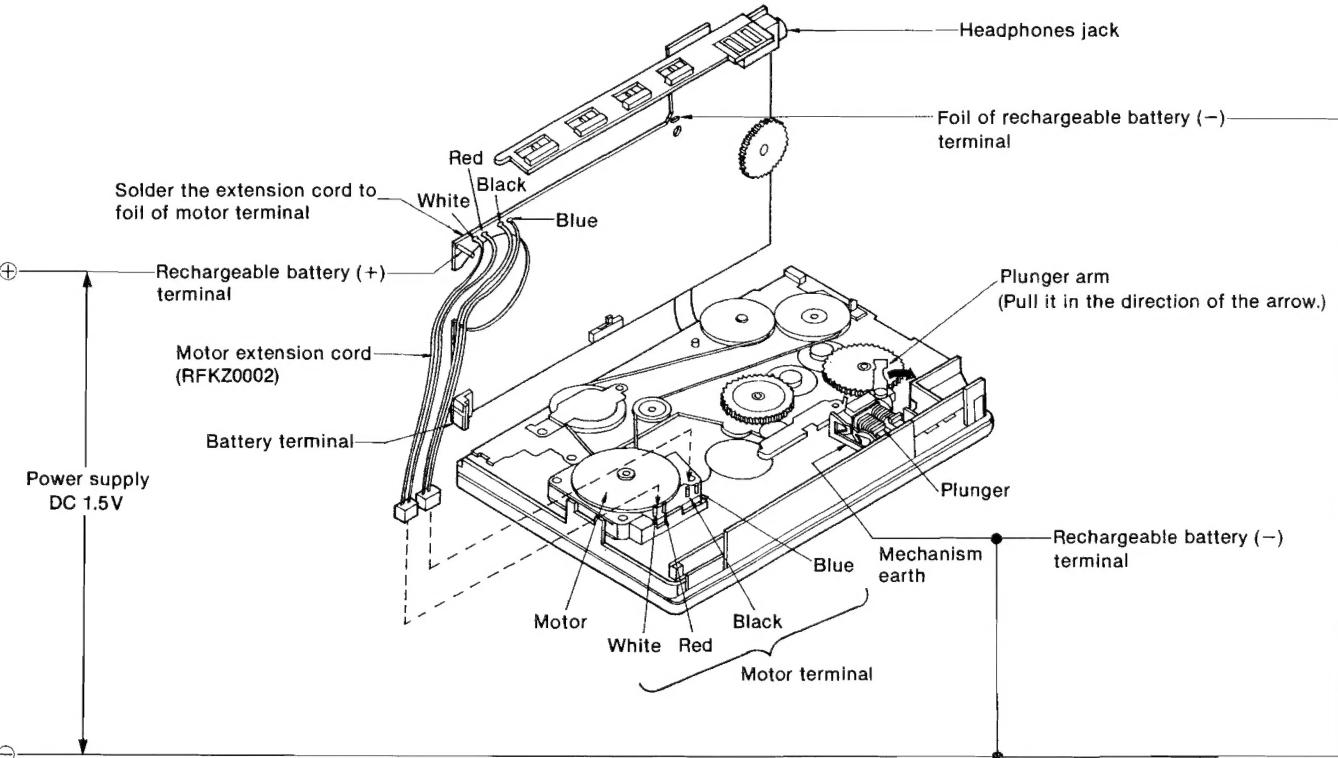
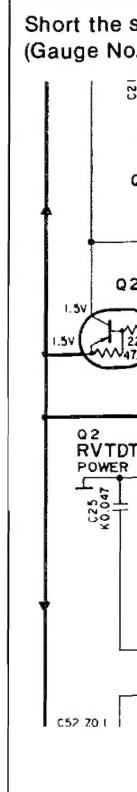


Fig. 1

• Short SCHEMAT



PRINTED



RECHA
BATTE
(RP-B1)

■ HOW TO CHECK OPERATIONS DURING DISASSEMBLY AND SERVICING

1. Cassette section

- Check operations during disassembly following the steps.
 - 1) Set the condition as shown in Fig. 1 in accordance with Disassembly Instructions. (DO NOT remove the solders on the head FPC.)
 - 2) Connect the PCB and motor with the extension cord (RFKZ0002).
 - 3) Short the short land with a soldering and then short-circuit them.
 - Short the short land Ⓐ for Power supply of AMP ON.
 - Short the short land Ⓑ for Power supply of motor ON.
 - Short the short land Ⓒ for Microcomputer reset.
 - 4) Connect the rechargeable battery (+) terminal and the rechargeable battery (-) terminal foil to the power source (DC 1.5V) with a lead wire. (Fig. 1)
 - 5) Connect the rechargeable battery (-) terminal foil and the rechargeable battery (-) terminal with a lead wire (mechanism earth).
 - 6) Manually operate the plunger arm when checking the PLAY/STOP operation.
 - Manually pulling the plunger arm once sets the FWD mode; twice, REV; and, three times, STOP.
- Operate the plunger arm manually. Even if the operation buttons are pressed, the plunger will not be actuated.
- Even if the mechanism unit is switched to the FWD mode in Step 6, the head change-over switch (IC1) will remain in the REV position, so set the REV mode to check the audio.

Before checking the operation problems and adjustments, be sure to release the hold state.
(Hold switch (S2): "OFF")

• After checking,
unsolder the short land Ⓐ, Ⓑ and Ⓒ.

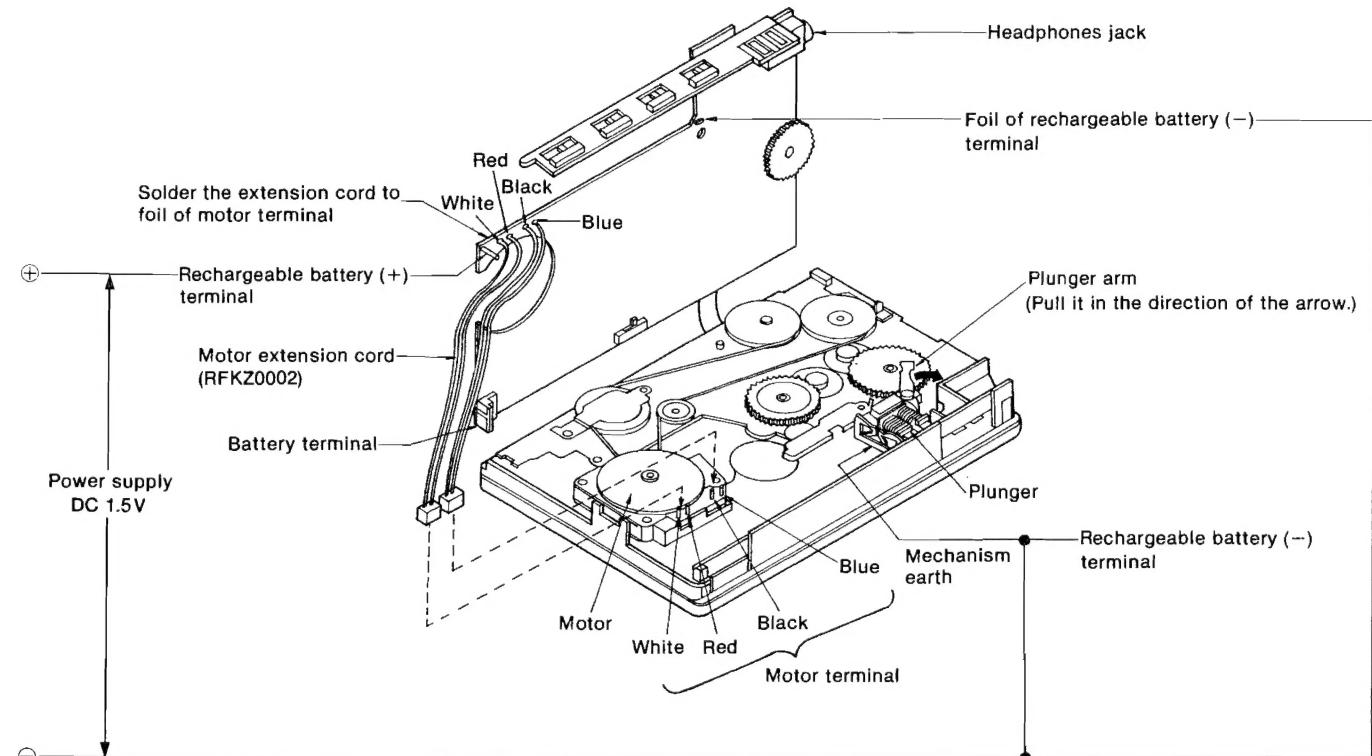
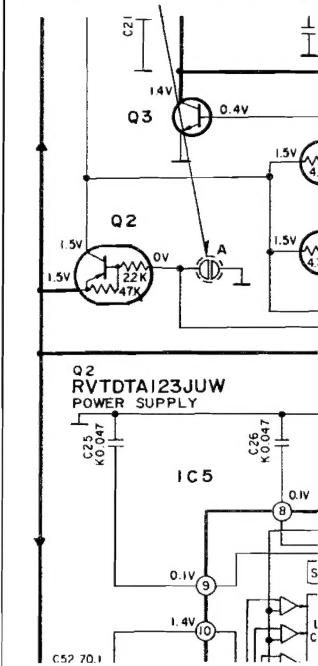


Fig. 1

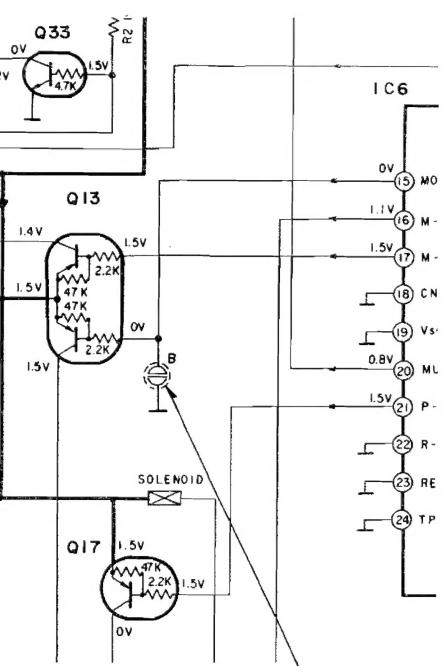
• Short points

SCHEMATIC DIAGRAM (Ⓐ Main Circuit)

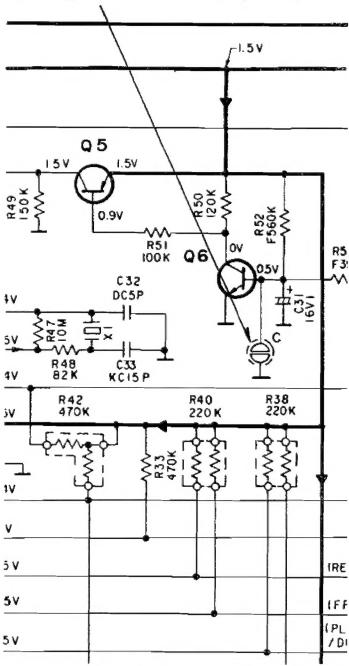
Short the short land Ⓐ.
(Gauge No. D-2 on page 15)



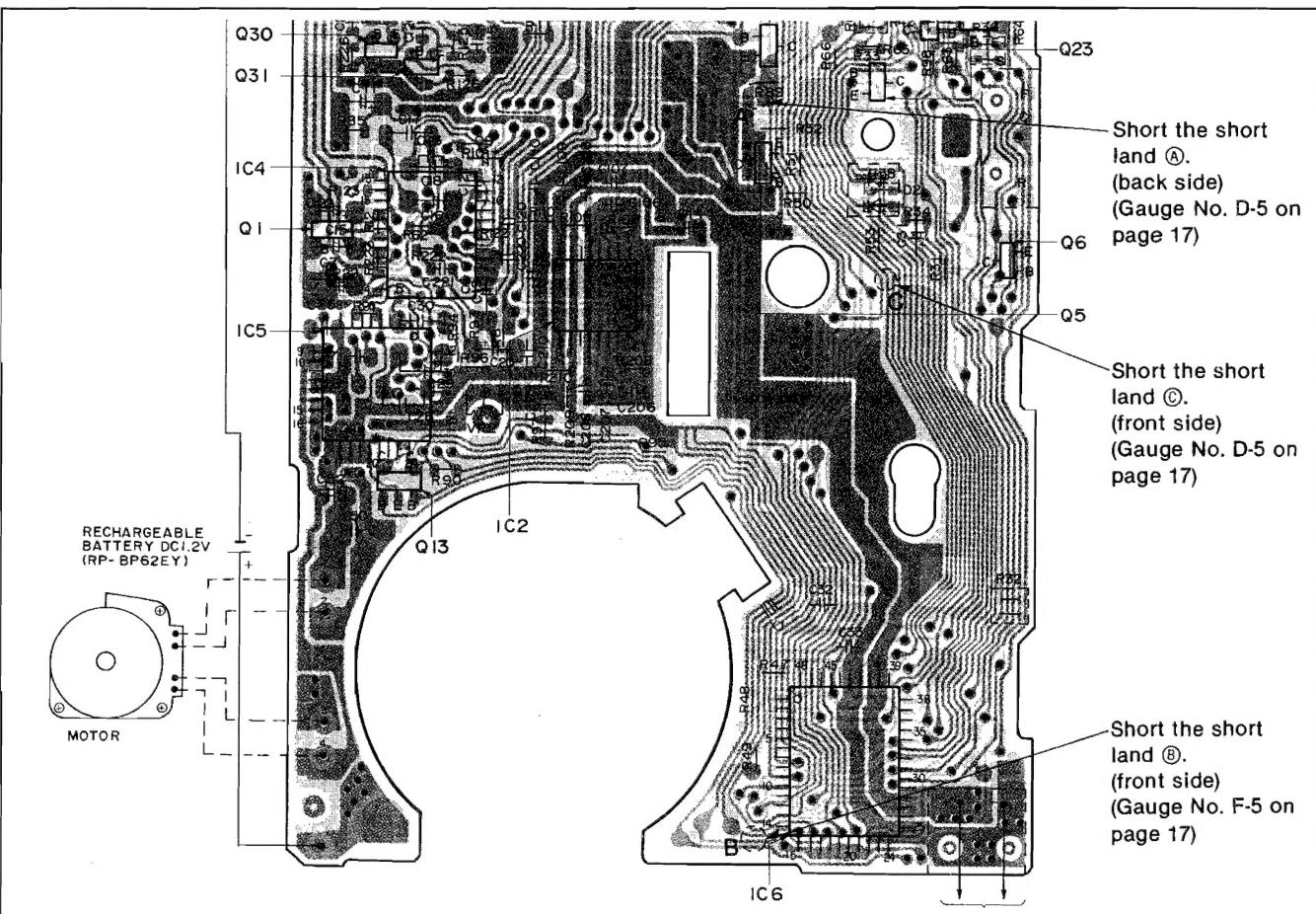
Short the short land Ⓒ.
(Gauge No. D-8 on page 16)



Short the short land Ⓑ.
(Gauge No. E-5 on page 15)



PRINTED CIRCUIT BOARD (Ⓐ Main P.C.B.)



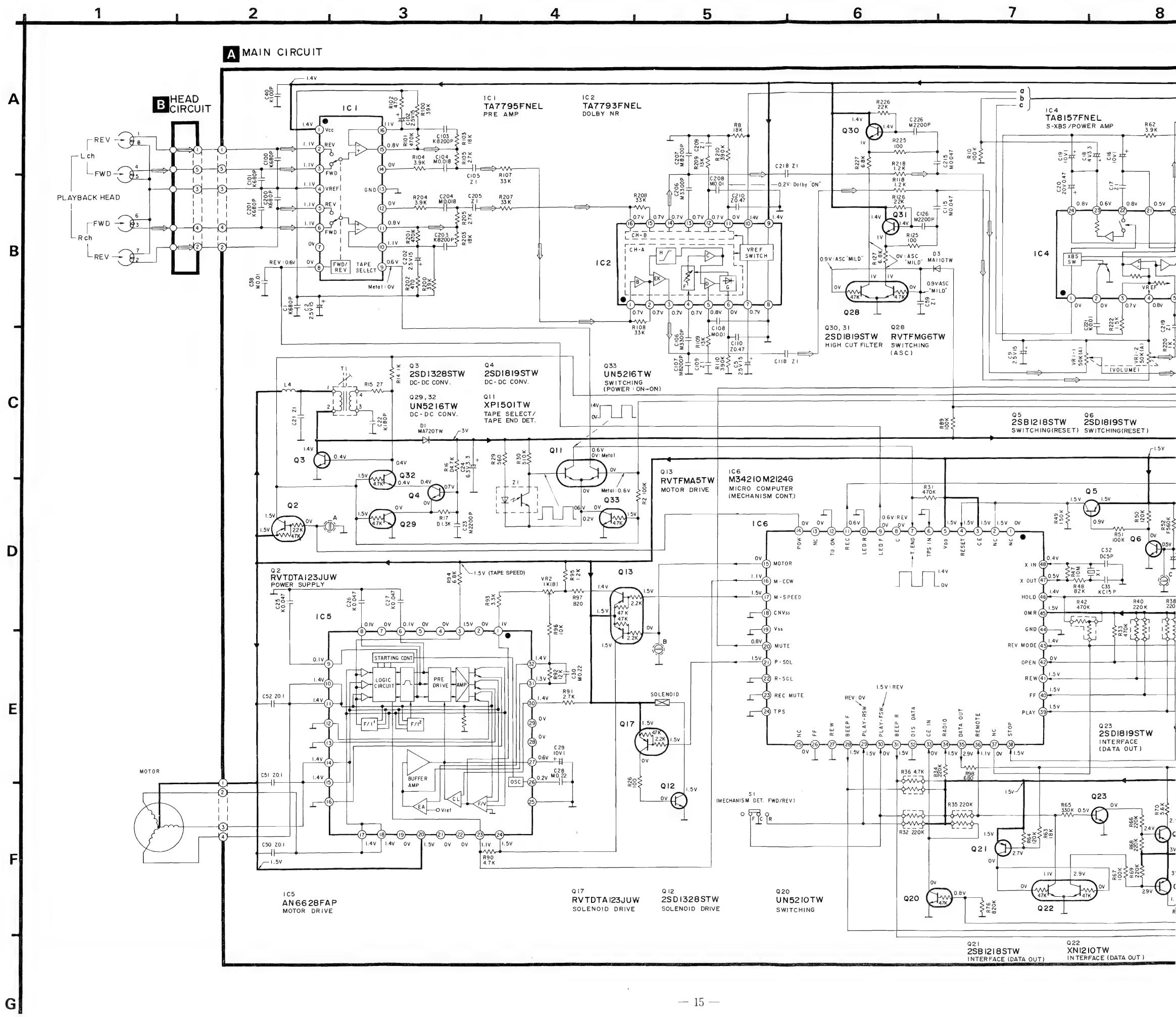
SCHEMATIC DIAGRAM

(See parts list on pages 19, 22, 23.)

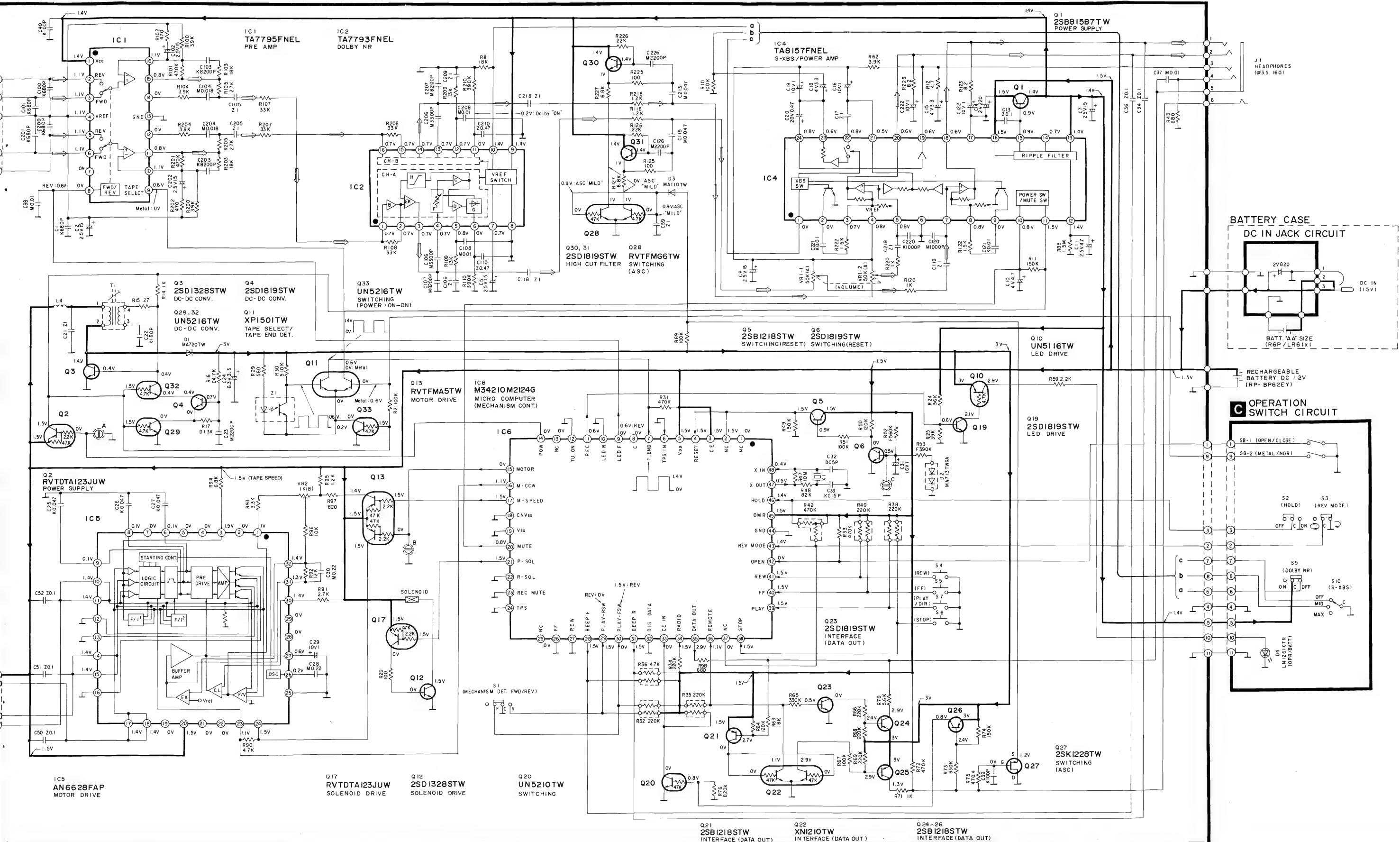
Notes:

- S1 : FWD/REV switch in "FWD" position.
(F...FWD, R...REV)
- S2 : Hold switch in "OFF" position.
- S3 : Reverse mode selector switch in " " position.
- S4 : Rewind switch in "OFF" position.
- S5 : Fast forward switch in "OFF" position.
- S6 : Stop switch in "OFF" position.
- S7 : Play/direction switch in "OFF" position.
- S8-1 : Leaf (open/close) switch in "OFF" position.
- S8-2 : Leaf (metal/normal) switch in "OFF" position.
- S9 : Dolby NR switch in "OFF" position.
- S10 : S-XBS switch in "OFF" position.
- VR1-1, VR1-2 : Volume control VR.
- VR2 : Tape speed adjustment VR.
- DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.
No mark...Playback
- Battery current (Tape)...170~185 mA (VR: MAX)
- This schematic diagram may be modified at any time with the development of new technology.

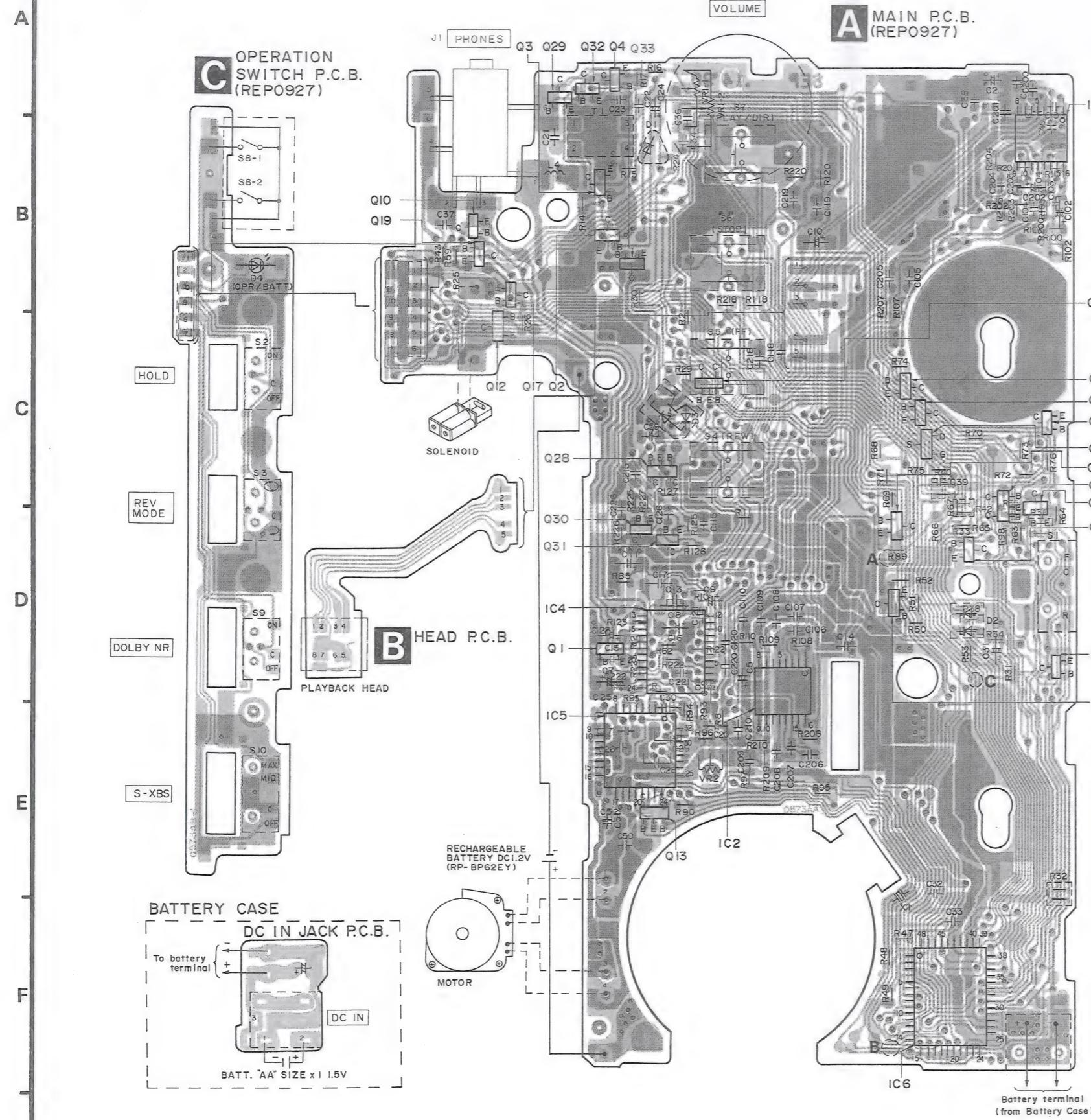
→ : PLAYBACK SIGNAL
→ : + B LINE



A MAIN CIRCUIT



PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

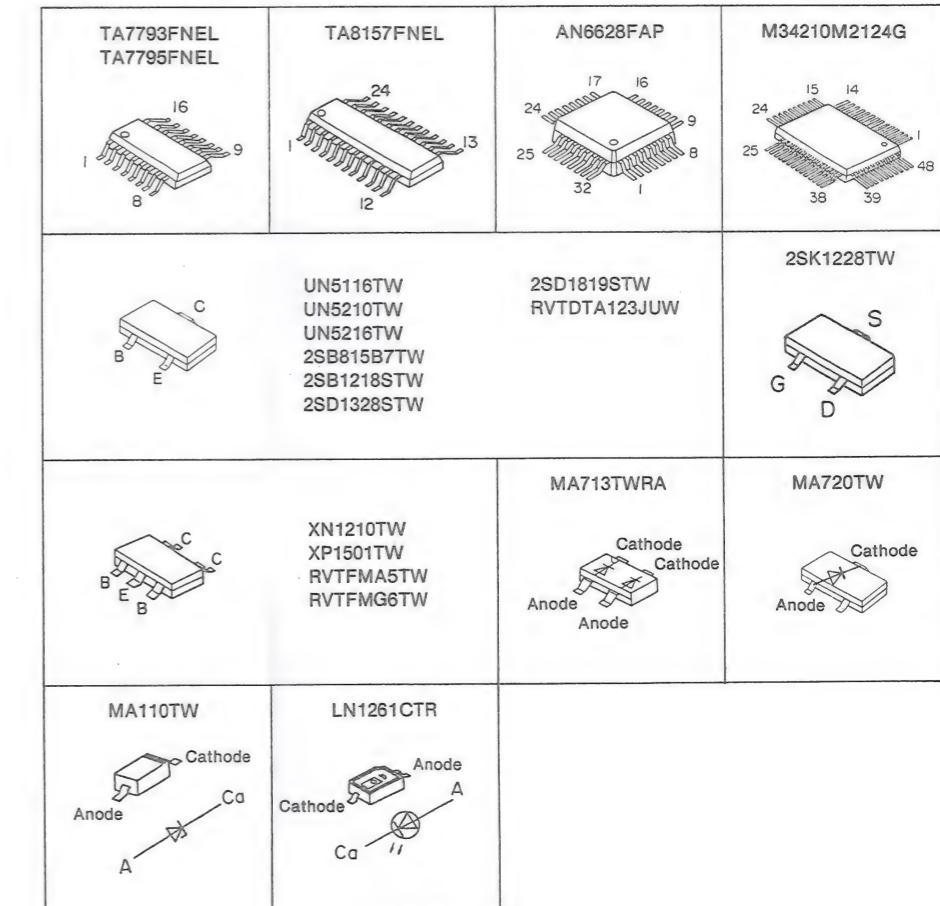


Notes:
This diagram shows a front view of the IC mounting surface.

1. The circuit shown in () on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in () on the conductor indicates printed circuit on the front side of the printed circuit board.
3. The symbols (•) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.

• This circuit board diagram may be modified at any time with the developement of new technology.

- Terminal guide of IC's, transistors and diodes



REPLACEMENT PARTS LIST

Notes : * Important safety notice:
 Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 * The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
 Parts without these indications can be used for all areas.

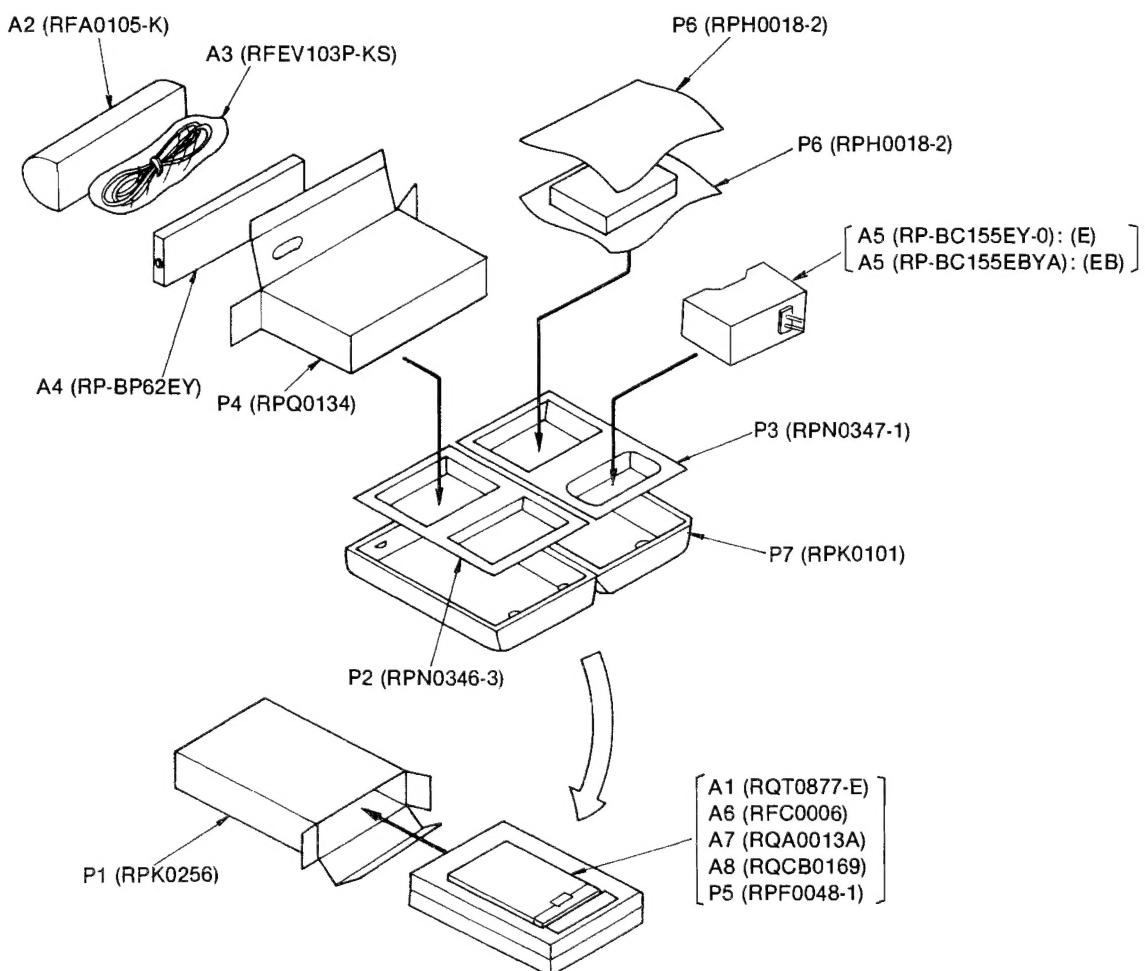
Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC1	TA7795FNEL	IC, PRE AMP	
IC2	TA7793FNEL	IC, DOLBY NR	
IC4	TA8157FNEL	IC, S-XBS/POWER AMP	
IC5	AN6628FAP	IC, MOTOR DRIVE	
IC6	M34210M2124G	IC, MICRO COMPUTER(MECH)	
		TRANSISTOR(S)	
Q1	2SB815B7TW	TRANSISTOR	
Q2	RVTDTA123JUW	TRANSISTOR	
Q3	2SD1328STW	TRANSISTOR	
Q4	2SD1819STW	TRANSISTOR	
Q5	2SB1218STW	TRANSISTOR	
Q6	2SD1819STW	TRANSISTOR	
Q10	UN5116TW	TRANSISTOR	
Q11	XP1501TW	TRANSISTOR	
Q12	2SD1328STW	TRANSISTOR	
Q13	RVTFMSTW	TRANSISTOR	
Q17	RVTDTA123JUW	TRANSISTOR	
Q19	2SD1819STW	TRANSISTOR	
Q20	UN5210TW	TRANSISTOR	
Q21	2SB1218STW	TRANSISTOR	
Q22	XN1210TW	TRANSISTOR	
Q23	2SD1819STW	TRANSISTOR	
Q24-26	2SB1218STW	TRANSISTOR	
Q27	2SK1228TW	TRANSISTOR	
Q28	RVTFMG6	TRANSISTOR	
Q29	UN5216-Q	TRANSISTOR	
Q30, 31	2SD1819STW	TRANSISTOR	
Q32, 33	UN5216-Q	TRANSISTOR	
		DIODE(S)	
D1	MA720TW	DIODE	
D2	MA713TWRA	DIODE	
D3	MA110TW	DIODE	
D4	LN1261CTR	L. E. D.	
		VARIABLE RESISTOR(S)	
VR1	EVUTOGA05A54	V. R. VOLUME CONTROL	
VR2	EVMSSX50B13	V. R. TAPE SPEED ADJ.	
		COMPONENT COMBINATION(S)	

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
2	RHD14008-K	SCREW	
4	RHQ0003-K	SCREW	
5	RHE5119ZA	SCREW	
6	RHQ0021-K	SCREW	
7	RHK0034-K	BATTERY COVER	
8	XQN14+CJ3FZ	SCREW	
9	RYF0114-K	CASSETTE LID ASS'Y	
9A	RHE5097ZA	SCREW	
9B	RXM0025	LINK ANGLE ASS'Y	
10	RYK0193-S	MIDDLE CABINET ASS'Y	
11	RYK0192B-K	BOTTOM CABINET ASS'Y	
11A	RGP0174-S1	ORNAMENT	
11B	RGU0478-K	OPERATION BUTTON	
11C	RKM0150B-K	BOTTOM CABINET	
11D	RMR0366-K	JACK PIECE	
11E	RMZ0124	SHEET	
12	RGU0479-H	BUTTON, OPEN	
13	RGV0066-H	KNOB, S-XBS/DOLBY HOLD	
14	RHQ0073-S	SIDE CABINET	
15	RJC99003-2	RECHARGEABLE BATTERY(+)	
16	RJC99004-2	RECHARGEABLE BATTERY(-)	
18	RJH9201	TERMINAL	
19	RJB0573A-1	OPERATION SWITCH P. C. B.	
20	RHQ0013	SCREW	
21	RKU0034	CAM GEAR CAP	
22	RJR0012	BATTERY SHAFT	
		MECHANISM PARTS	
101	HPX-26NB1C	MOTOR	
102	XQS14+A18FZ	SCREW	
103	RDV0016	BELT	
104	RXQ0006-1	HEAD BLOCK ASS'Y	
104A	RNW101ZA	WASHER	
104B	RME0004-1	PINCH ROLLER SPRING(L)	
104C	RME0005	PINCH ROLLER SPRING(R)	
104D	RXL0004-1	PINCH ROLLER ARM(L)	
104E	RXL0005	PINCH ROLLER ARM(R)	
105	RMA0023	HOLDER(R)	
106	RHE5147ZA	SCREW	
107	RHW42002	WASHER	
108	RFKRQS11E	HEAD BLOCK ASS'Y	
108A	RMQ0011	ANGLE(L)	
108B	RMQ0012	ANGLE(R)	

Note: Printed circuit board assembly with mark (NLA) is no longer available after discontinuation of the product.

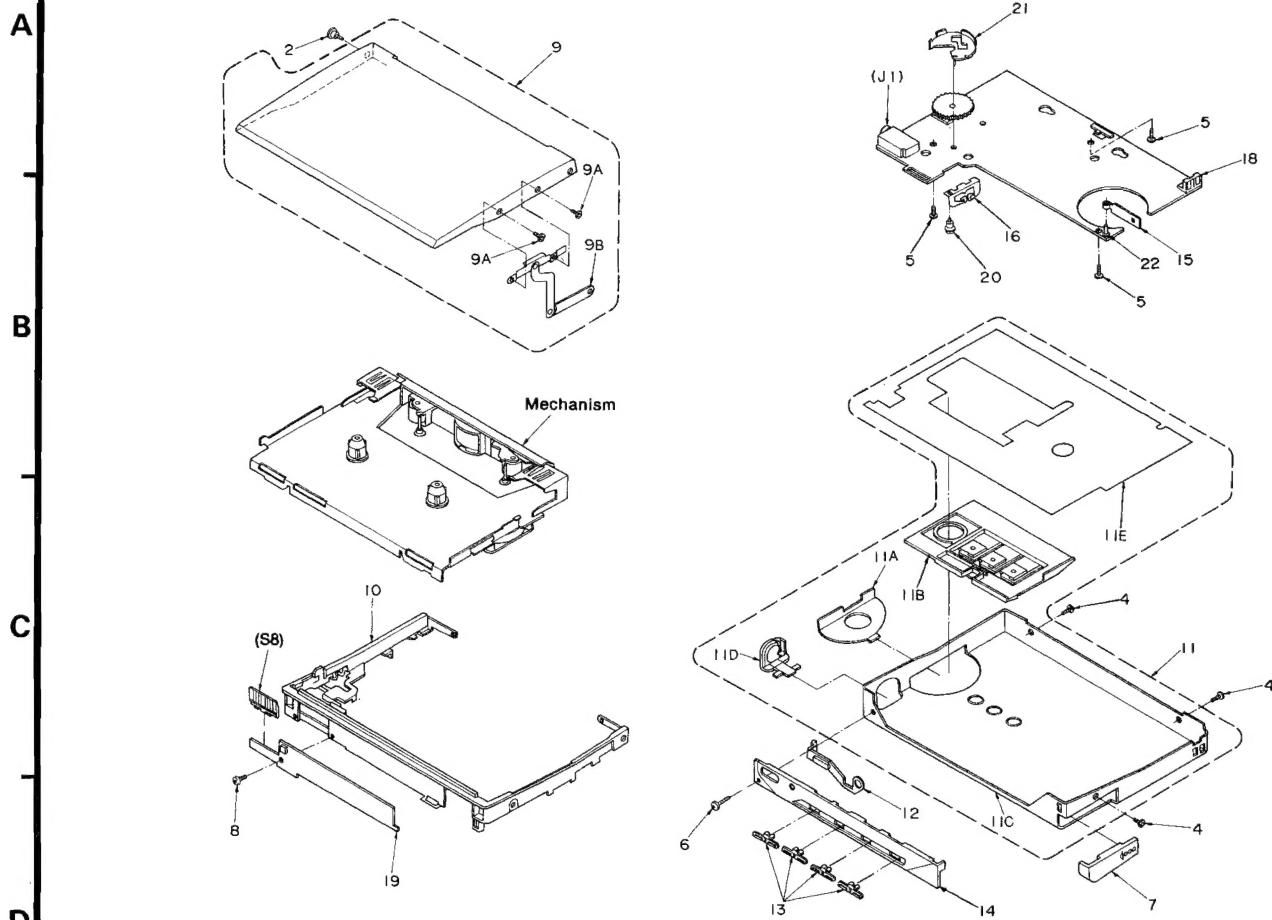
Ref. No.	Part No.	Values & Remarks					
C205	ECUV1C1052FN	16V 1U					
C206	ECUV1H332MBV	50V 3300P					
C207	ECUV1E822MBV	25V 8200P					
C208	ECUV1E103MBV	25V 0.01U					
C209	ECUV1C1052FN	16V 1U					
C210	ECUV1C474ZFN	16V 0.47U					
C215	ECUV1C473MBN	16V 0.047U					
C218, 219	ECUV1C1052FN	16V 1U					
C220	ECUV1H102MBV	50V 1000P					
C221	ECUV1E103KBV	25V 0.01U					
C222	RCSX1AA105LE	10V 1U					
C226	ECUV1H222MBV	50V 2200P					

■ PACKING



1 2 3 4 5

■ CABINET PARTS LOCATION



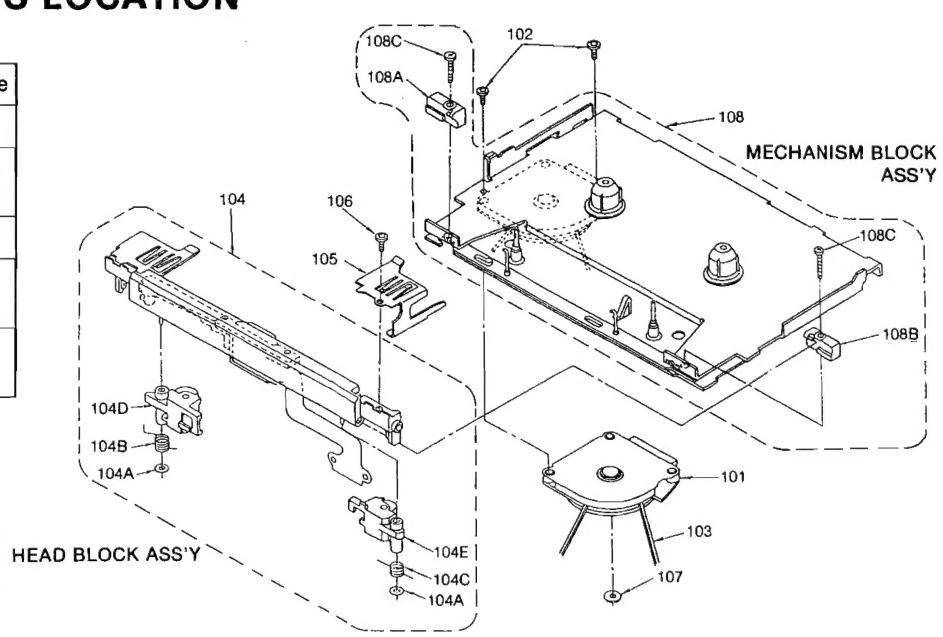
1 2 3 4 5

■ MECHANICAL PARTS LOCATION

FWD & REV mode	
Wow and flutter	0.3% (WRMS)
Pressure of pinch roller	120 ± 20 g
Take-up tension	More than 60 g
Playback torque	20^{+15}_{-5} g·cm
FF/REW torque	More than 60 g·cm

B

The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately except parts indicated with Ref. No.



■ RESISTORS & CAPACITORS

Notes : * Capacity values are in microfarads (μF) unless specified otherwise, P =Pico-farads (pF) F =Farads (F)
 * Resistance values are in ohms, unless specified otherwise, $1\text{K}=1,000\text{ }(\Omega)$, $1\text{M}=1,000\text{k }(\Omega)$

Ref. No.	Part No.	Values & Remarks		Ref. No.	Part No.	Values & Remarks		Ref. No.	Part No.	Values & Remarks							
RESISTORS																	
R2 ERJ3GEYJ104V 1/16W 100K																	
R8 ERJ3GEYJ183V 1/16W 18K																	
R10 ERJ3GEYJ104V 1/16W 100K																	
R11 ERJ3GEYJ154V 1/16W 150K																	
R12 ERJ3GEYJ4R7V 1/16W 4.7																	
R14 ERJ3GEYJ102V 1/16W 1K																	
R15 ERJ3GEYJ270V 1/16W 27																	
R16 ERJ3GEYD472V 1/16W 4.7K																	
R17 ERJ3GEYD132V 1/16W 1.3K																	
R24 ERJ3GEYJ563V 1/16W 56K																	
R25 ERJ3GEYJ393V 1/16W 39K																	
R26 ERJ3GEYJ101V 1/16W 100																	
R29 MCRO3PZHJ561 1/16W 560																	
R30 ERJ3GEYJ514V 1/16W 510K																	
R31 ERJ3GEYJ474V 1/16W 470K																	
R32 EXBV4V224J 1/16W 220K																	
R33 ERJ3GEYJ474V 1/16W 470K																	
R34 ERJ3GEYJ224V 1/16W 220K																	
R35 EXBV4V224J 1/16W 220K																	
R36 EXBV4V472J 1/16W 4.7K																	
R38 EXBV4V224J 1/16W 220K																	
R40 EXBV4V224J 1/16W 220K																	
R42 EXBV4V474J 1/16W 470K																	
R43 ERJ3GEYJ681V 1/16W 680																	
R47 ERJ3GEYK106V 1/16W 10M																	
R48 ERJ3GEYJ823V 1/16W 82K																	
R49 ERJ3GEYJ154V 1/16W 150K																	
R50 ERJ3GEYJ124V 1/16W 120K																	
R51 ERJ3GEYJ104V 1/16W 100K																	
R52 ERJ6GEYF564V 1/10W 560K																	
R53 ERJ6GEYF394V 1/10W 390K																	
R59 ERJ3GEYJ222V 1/16W 2.2K																	
R62 ERJ3GEYJ392V 1/16W 3.9K																	
R63 ERJ3GEYJ183V 1/16W 18K																	
R64 ERJ3GEYJ124V 1/16W 120K																	
R65 ERJ3GEYJ334V 1/16W 330K																	
R66 ERJ3GEYJ224V 1/16W 220K																	
R67 ERJ3GEYJ104V 1/16W 100K																	
R68, 69 ERJ3GEYJ224V 1/16W 220K																	
R70 ERJ3GEYJ562V 1/16W 5.6K																	
R71 ERJ3GEYJ102V 1/16W 1K																	
R72 ERJ3GEYJ474V 1/16W 470K																	
R73 ERJ3GEYJ334V 1/16W 330K																	
R74 ERJ3GEYJ154V 1/16W 150K																	
R75 ERJ3GEYJ474V 1/16W 470K																	
R76 ERJ3GEYJ824V 1/16W 820K																	
R85 ERJ3GEYJ155V 1/16W 1.5M																	
R89 ERJ3GEYJ104V 1/16W 100K																	
R90 ERJ3GEYJ472V 1/16W 4.7K																	
R91 ERJ3GEYJ272V 1/16W 2.7K																	
R92 ERJ3GEYJ123V 1/16W 12K																	
R93 ERJ3GEYJ332V 1/16W 3.3K																	
R94 ERJ3GEYJ682V 1/16W 6.8K																	
R95 RRSL25J122U 1/8W 1.2K																	
R96 ERJ3GEYJ103V 1/16W 10K																	
R97 ERJ3GEYJ821V 1/16W 820																	
R98 ERJ3GEYJ681V 1/16W 680																	
R100 ERJ3GEYJ393V 1/16W 39K																	
R101 ERJ3GEYJ474V 1/16W 470K																	
R102 ERJ3GEYJ471V 1/16W 470																	
R103 ERJ3GEYJ183V 1/16W 18K																	
R104 ERJ3GEYJ392V 1/16W 3.9K																	
R105 ERJ3GEYJ272V 1/16W 2.7K																	
R107, 108 ERJ3GEYJ333V 1/16W 33K																	
R118 ERJ3GEYJ122V 1/16W 1.2K																	
R126 ERJ3GEYJ223V 1/16W 22K																	
R127 ERJ3GEYJ682V 1/16W 6.8K																	
R200 ERJ3GEYJ393V 1/16W 39K																	
R201 ERJ3GEYJ474V 1/16W 470K																	
R202 ERJ3GEYJ471V 1/16W 470																	
R203 ERJ3GEYJ183V 1/16W 18K																	
R204 ERJ3GEYJ392V 1/16W 3.9K																	
R205 ERJ3GEYJ272V 1/16W 2.7K																	
R207, 208 ERJ3GEYJ333V 1/16W 33K																	
R209 ERJ3GEYJ133V 1/16W 13K																	
R210 ERJ3GEYJ394V 1/16W 390K																	
R218 ERJ3GEYJ122V 1/16W 1.2K																	
R220 ERJ3GEYJ102V 1/16W 1K																	
R222 ERJ3GEYJ152V 1/16W 1.5K																	
R223 ERJ3GEYJ8R2V 1/16W 8.2																	
R225 ERJ3GEYJ101V 1/16W 100																	
R226 ERJ3GEYJ223V 1/16W 22K																	
R227 ERJ3GEYJ682V 1/16W 6.8K																	
C1 ECUV1H681KBV 50V 680P																	
C2 RCSX0EY156LE 2.5V 15U																	